

eLION DC/DC Converter EDCC1

Heavy duty design for off-highway applications



To successfully fulfill the increasing demand for improved efficiency or even local zero emissions, Bosch Rexroth has designed the eLION high voltage solution portfolio for the off-highway market. In addition, the portfolio provides enhanced machine performance and productivity. When combined with its existing application and technology expertise, Bosch Rexroth is a strong engineering partner for off-highway vehicle manufacturers. Regardless of whether the traction, implements, or an auxiliary function is being electrified, the eLION portfolio provides the perfect solution.

CUSTOMER BENEFITS

- Boardnet power supply with up to 4 kW on a single device
- Robust design to endure off-highway conditions
- Safety functions according to ISO 13849 and ISO 25119
- Easy integration with single-sided connection
- CAN J1939 communication
- Bidirectional operation capability

FUNCTION AND BENEFITS

Boardnet power supply with up to 4 kW on a single device

By converting high voltage from the battery to either 12 or 24 V_{DC}, the eLION DC/DC converter supplies power to the vehicle's LV energy boardnet. It can be operated as a single device to supply 4 kW or in parallel with up to 4 devices to supply 16 kW according to varying power requirements in each vehicle.

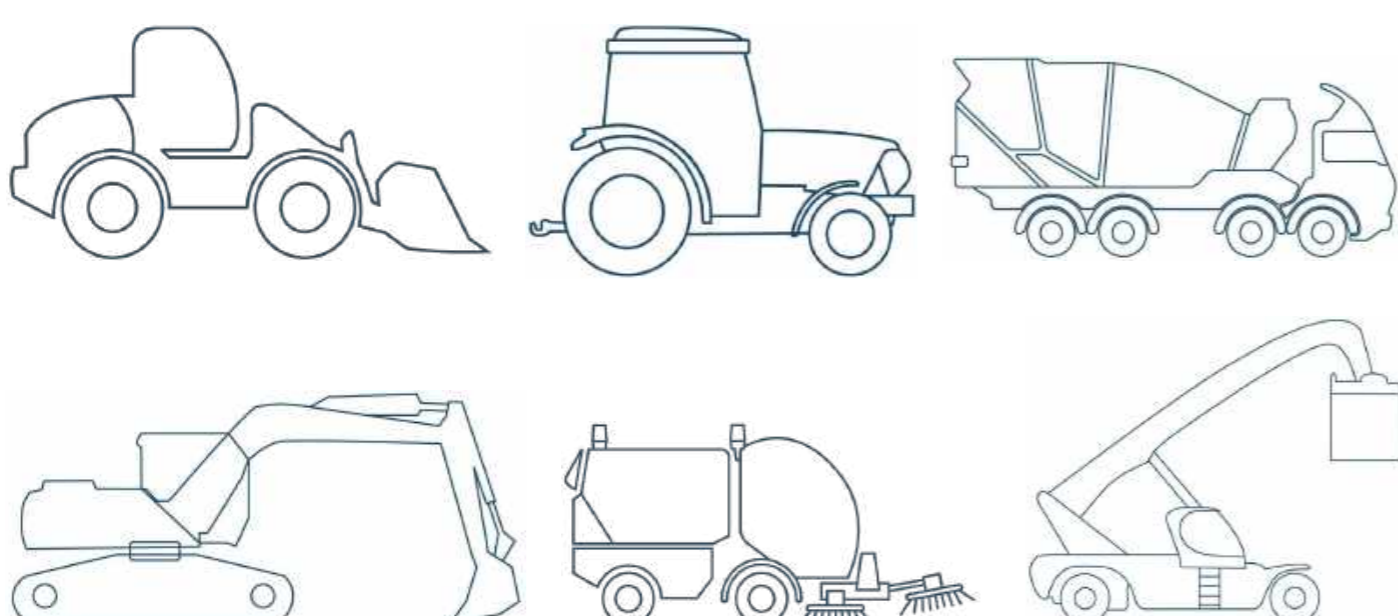
Robust design to endure off-highway conditions

In accordance with ISO 20653, the eLION DC/DC converter is rated up to IP6K7 and IP6K9K, enabling it to withstand the harsh environments, which off-highway vehicles are exposed to. Furthermore, the eLION DC/DC converter is efficiently operated between ambient temperature ranges of -40 °C to +85 °C.

Safety functions according to ISO 13849 and ISO 25119

To ensure safety on the entire vehicle, all eLION components are equipped with functional safety in accordance with ISO 13849 and ISO 25119 and are rated up to PL c on the system level. The functions provided include over and undervoltage protection, low voltage current and voltage reporting, as well as safe deactivation.

APPLICATIONS



eLION DC/DC Converter EDCC1

Heavy duty design for off-highway applications

TECHNICAL DATA

eLION DC/DC Converter EDCC1

Nom. operating voltage range:	380 ... 870 V _{DC}
Derated operating voltage range:	350 ... 890 V _{DC}
Overvoltage protection:	920 V _{DC}
Nom. operating voltage range:	10 ... 15.5 & 20 ... 31 V _{DC}
Nom. output voltage:	14 & 28 V _{DC}
Continuous current:	250 & 143 A
Peak current:	300 & 171 A
Nominal power:	3.5 & 4.0 kW
Weighted efficiency:	up to 92%
Coolant flow rate (@ 65 °C):	> 6 L/min
Pressure drop (@ 6 L/min & 65 °C):	< 50 mbar
Data sheet:	RE96770

Easy integration with single-sided connection

To ensure easy integration, the eLION DC/DC converter is designed with a high-power density and all connectors on one side of the housing. In addition, the connectors are designed using the poka-yoke principle and with an integrated high voltage interlock (HVIL) system with passive detection.

CAN J1939 communication

As a communication bus system designed for off-highway applications, the CAN J1939 (CAN 2.0) complements the eLION DC/DC converter with its integrated UDS services. The system creates efficient communication and diagnostic channels between components.

Bidirectional operation capability

The eLION DC/DC converter supports boost and buck operation mode as well as high voltage DC link pre-charging and discharging for various battery-electric, off-highway vehicles.

- 1 = LV Connector
- 2 = B+ Connection
- 3 = HV Connector
- 4 = Cooling Channels

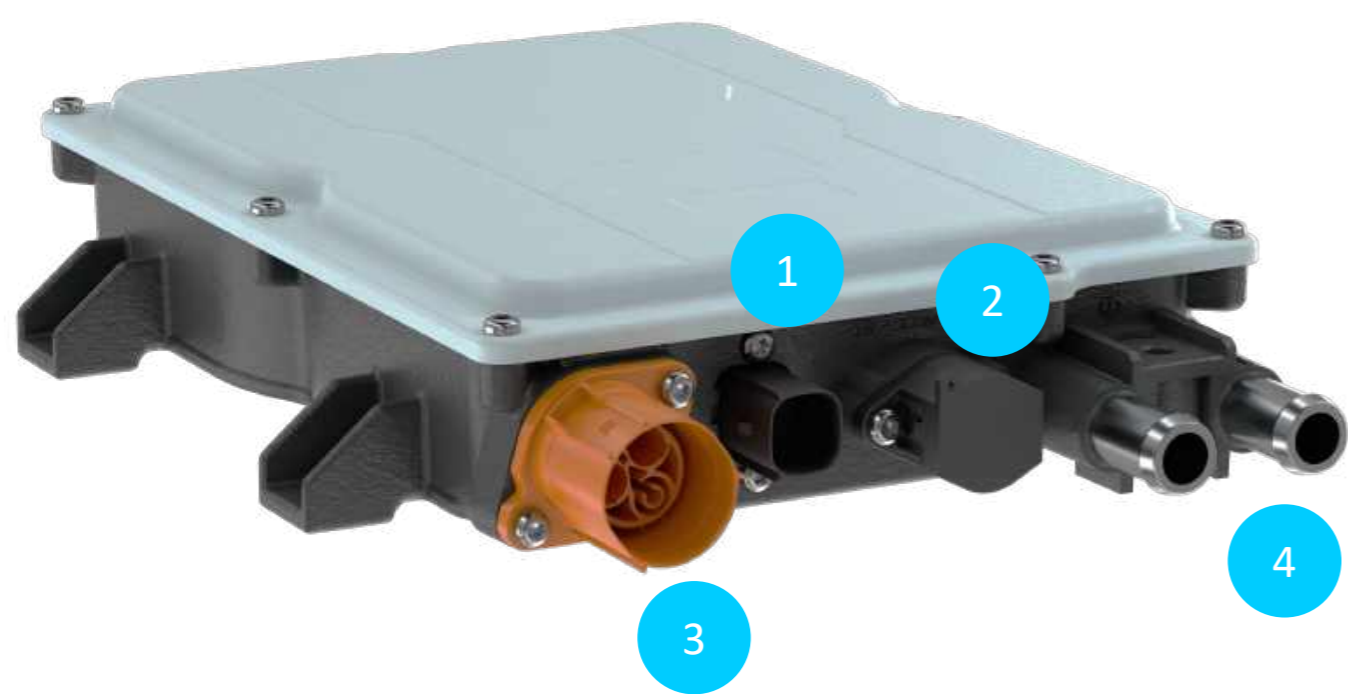


Image: EDCC1 DC/DC Converter Connections